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COMMODITIES AND RISK MANAGEMENT

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Mr. Chairman and Members of the Subcommittee, my name is Barry Barnett and I am an associate professor in the Department of Agricultural and Applied Economics at the University of Georgia. I have conducted research on various issues related to the Federal crop insurance program for approximately fifteen years. Several of those research efforts have been funded by the Risk Management Agency (RMA). I also serve as an expert reviewer for the Board of Directors of the Federal Crop Insurance Corporation.

Where to From Here?

Federal crop insurance has expanded tremendously since historic changes were introduced in the Federal Crop Insurance Act of 1980. In recent testimony before this subcommittee, RMA Administrator Gould indicated that approximately 370 crops are currently insured under the program. In 2004, I participated in a team that analyzed the portfolio of Federal Crop Insurance Products and prepared a report for the Federal Crop Insurance Corporation Board of Directors. A major finding from that report was that almost all crops of any economic significance are either currently insurable or soon will be insurable under the Federal crop insurance program. Of course, insurance may not be available in every region of the country that produces the crop but it is generally available in major production regions.

The primary exceptions to this general conclusion are pasture, rangeland, and forage. In 2003 there were almost 450 million acres of pasture and rangeland in the United States and another 65 million acres of hay and forage. However, insurance for these crops is currently only available in very limited areas. The 2004 report estimated the annual value of pasture, rangeland, hay, and forage (including silage) at approximately \$18.6 billion. For 2003 only about \$0.5 billion of that amount was insured with any type or level of Federal crop insurance coverage.

There is an important reason why pasture, rangeland, hay, and forage have such low crop insurance market penetration. These crops are among the most difficult to insure. The crop is often consumed by livestock on the farm rather than being sold off the farm. Thus, it is difficult to get accurate and verifiable measures of yield. A number of important product development efforts for pasture, rangeland, hay, and forage insurance are currently underway. These efforts include the use of indices based on rainfall or satellite imagery to “cross-hedge” pasture, rangeland, hay, and forage production risk.

The 2004 report estimated that the total value of U.S. crop production in 2003 was approximately \$131 billion. This value includes pasture, rangeland, hay, and forage valued at \$18.6 billion and a small number of aquaculture commodities that are treated as crops for RMA data purposes. Crops that are: 1) covered (though not necessarily available in all production regions) under existing permanent crop insurance products (including pasture, rangeland, and forage); 2) covered under existing pilot products; or 3) have been targeted by RMA for pilot products by 2010 account for \$128 billion or 97.5 percent of the total value of crop production in 2003. At this time, RMA has decided not to pursue insurance products for various other crops that combined have production

valued at approximately \$3 billion or 2.3 percent of the total. The decision to not pursue insurance products for these crops was based on either the results of feasibility studies or a lack of interest among producers of the crops. The remaining 34 specialty crops have all been targeted by RMA for pilot products after 2010. Together they accounted for only about 2 tenths of one percent of total U.S. crop value in 2003.

Livestock is the other significant source of agricultural production value in the U.S. In recent years, the RMA has initiated some livestock pilot products. These products all protect against price risk rather than production risk. As with pasture, rangeland, hay, and forage, there are good reasons why products have not been offered for livestock production risk. Livestock species such as poultry and swine are typically produced under strict environmental control in confinement facilities. This greatly reduces production risk. Generally, the production risk of most concern to livestock producers is highly contagious diseases. However, it is very difficult to insure against such diseases without creating perverse incentives – that is, incentives for producers to be less careful in their sanitary practices, thus creating even greater risk for the entire production sector.

With the current efforts underway to develop products for pasture, rangeland, hay, and forage, it seems that the RMA has nearly exhausted the potential for adding additional crops to the Federal crop insurance program. The future of the current pilot products that insure against livestock price risk will be evaluated at the end of their respective pilot periods. Recognizing the potential problems that could be created, RMA has thus far chosen not to insure against livestock production risk. I consider that to be a

wise decision. Any future efforts to investigate the potential for insuring against livestock production risk should proceed with great caution.

Many farmers can now choose from among several different Federal crop insurance offerings for the same crop. For example, in some regions, farmers can now select from among farm-level yield insurance, farm-level revenue insurance, area-based yield insurance, and area-based revenue insurance. Different farmers have different risk management needs so it is important to have such choices available. However, offering multiple products to farmers also heightens the need for careful maintenance by the RMA. A farmer should choose from among the various Federal crop insurance products being offered based on how well each product meets his/her risk management needs. The actuarial performance of the program can be threatened when mistakes in the design or rating of a particular insurance product cause that product to be relatively more attractive to farmers. An old adage (known formally as Gresham's law) is that "bad money drives out good." Similarly, bad insurance products tend to drive out good. It is also important to note that the underwriting and rating of an insurance product is not done simply "once and forever." Effective insurance products must be continually maintained by adjusting the underwriting and rating to reflect changes in production practices or environmental conditions. For these reasons, the importance of maintaining existing RMA products was a point of emphasis in the 2004 report mentioned earlier. At this time, I believe that the interests of both farmers and the Federal crop insurance program would be better served by focusing more of the RMAs efforts and resources on maintaining and improving the existing portfolio of insurance products available for crops that are currently insured (or

targeted for pilot products by 2010) rather than by attempting to add new crop or livestock species to the Federal crop insurance program.

Area-Based Products

The area-based products, Group Risk Plan (GRP) and Group Risk Income Protection (GRIP), are examples of efforts to improve the portfolio of risk management products available to U.S. farmers through the Federal crop insurance program. Let me be very clear in saying that many farmers will understandably prefer the farm-level yield and revenue insurance products (APH, CRC, RA, etc.) to the area-based products (GRP and GRIP). It is possible for a farmer to experience a loss on his/her farm and not receive an indemnity on either a GRP or GRIP policy if similar losses were not widespread across the county. So farmers, who are particularly concerned about their exposure to farm-level losses that are not correlated with county-level losses, should not purchase GRP or GRIP. It is also important to note that the National Agricultural Statistical Service (NASS) county-level yield data required to construct the area-based products is not available for all crop and regions.

However, where available, GRP and GRIP can provide lower cost risk management alternatives for farmers who are primarily concerned with protecting against exposure to risks, such as drought, that tend to be widespread rather than idiosyncratic. I disagree with those who argue that most farmers will be confused by GRP and GRIP. GRP and GRIP are essentially put options on county-level estimates of yield and revenue, respectively. In that sense, they are conceptually analogous to the options on futures contracts that are used by many farmers to hedge price risk. GRP and GRIP will not, and

should not, replace the existing farm-level insurance products. But they can be a valuable alternative risk management tool for some farmers.

Calculating Expected Yield

An important current issue is the manner in which expected yields are calculated for the various Federal crop insurance products. For the farm-level yield and revenue insurance products that currently constitute almost 90 percent of total premium in the Federal crop insurance program, the yield or revenue guarantee depends directly on the Actual Production History (APH) yield for the insurance unit. In its most basic form the APH yield is a simple 4 to 10 year average of historical yields on the insurance unit. In contrast, the expected yield on the area-based products is a trend-adjusted forecast based on a longer time-series of county-level data.

In recent years, farmers in some regions have experienced multiple-year disasters that have caused their APH yields (and thus, their APH, CRC, or RA guarantees) to decrease dramatically. In contrast, the expected yields on the area-based products have tended to decrease less because they are based on a longer time-series of data. Thus, this difference in how expected yields are calculated has caused some farmers to switch from the farm-level products to the area-based products.

Allow me to make several comments about this. First, as indicated above, the area-based products offer very different risk protection than that offered by the farm-level products. Farmers should not switch to area-based products without carefully considering the extent of their exposure to idiosyncratic risks. Second, it is troubling that some farmers are switching between farm-level and area-based products based not on

careful consideration of the different risk protections offered by the products but rather on differences in how expected yields are calculated.

Third, there is no perfect statistical procedure for estimating expected yields. The APH measure has the advantage of being simple and easy to understand. The disadvantage is that since APH yields are based on a simple 4-10 year average, they are sensitive to successive years of low yields (multiple-year disasters). Of course, the inverse is also true. A rare random sequence of unusually high yields can cause the APH measure to be well above the actual expected yield. Were this to occur, one would expect to see some people switch from the area-based products back to the farm-level products. In recent years, the RMA has put in place various procedures to limit the impact of multiple-year disasters on APH yields. However, if a significant number of farmers are making crop insurance purchase decisions based not on the risk management characteristics of the products but rather on differences in how expected yields are calculated, this is an issue that requires further attention.

Fourth, if, as some have argued, the APH measure of expected yield is too sensitive to successive years of low yields it is important to note that the magnitude of this effect will vary across crops and regions. For crops and regions that are characterized by high yield variability (e.g., wheat in the Northern plains or cotton in the Southern plains), there is potential for large errors in APH measures of expected yield that are calculated as a simple 4-10 year average. The magnitude of the error should be lower for crops and regions with less yield variability.

Fifth, a significant challenge facing RMA is trying to determine whether a sequence of three or four successive low yields is, in fact, just a rare random occurrence

or whether it instead reflects a structural change (e.g., changes in production practices, soil quality, water availability, weather patterns, or exposure to pests and disease) so that historical yields are no longer indicative of expected yields.

Sixth, another concern that has been raised about the APH measure of expected yield is that it does not adjust for technology trends (whereas the expected yield for the area-based products does adjust for trends). To the extent that yields trend upward over time, a simple 4-10 year average will underestimate the true expected yield – the larger the positive trend, the more that the APH measure will underestimate the true expected yield. But again, the inverse is also true. If yields are gradually trending downward (which is less common but does occur for some crops and regions), the APH yield will overestimate expected yield because it does not adjust for the downward trend.

Alternative measures of farm-level expected yield could be developed that would combine the farm-level yield data currently used to calculate APH yields with longer series of NASS county-level yield data. Because they would also utilize the longer series of NASS data, these alternative measures would reduce the magnitude of the sensitivity differences between the farm-level and area-based products. If one believes, as I do, that the current APH measure is too sensitive to successive years of unusually low (or high) yield events, these alternative measures should also improve the performance of the farm-level yield and revenue insurance products. Of course, the required NASS county-level yield estimates are not available for all crops and regions, but they are available for the crops and regions where area-based products are currently offered. It is also important to note that any measure that utilizes NASS data will be more complex and thus, less transparent to producers, than the simple APH measure. In addition, while it may be

desirable to have a measure of expected yield that is less sensitive to successive unusual yield events than the current APH measure, it is also important that any alternative measure retain sufficient sensitivity that it can respond to true structural changes.

I know that the members of this committee are very interested in the impact of multiple-year disasters on the APH measure of expected yield. I applaud you for that interest but also caution that this is a challenging statistical problem. I understand that the RMA has funded two development contracts that are examining alternative measures of expected yield that could be used with Federal crop insurance products. This is an issue that has important implications for producers and for the actuarial soundness of the Federal crop insurance program. I am hopeful that alternative measures will be developed in the not too distant future. However, these alternative measures will be statistically complex. If they are to be implemented within the Federal crop insurance program, the RMA will likely need additional resources to hire individuals with the statistical skills required to develop and maintain these measures.

This concludes my comments. I will be happy to entertain questions at the appropriate time.